A METHOD OF DRAINAGE OF THE ANKLE JOINT.[1]

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SOME years ago a number of cases came under my care which varied in detail but had in common this, that they were in effect open injuries of the ankle, that the joint was much soiled by the introduction of foreign matter at the time of the original injury, that disinfection of it was practically impossible, and drainage a necessary feature of the scheme of treatment.

The results of the plans at first used were unsatisfactory to a degree. The drainage was very defective and a panarthritis usually developed, which was almost always followed by a spreading cellulitis of the leg and a general sepsis so severe that amputation through the leg had to be made, or, if this was escaped, a rigid and tender ankle only was obtained.

A more effective plan of drainage had therefore to be devised for use in subsequent cases of a similar kind.

On studying the anatomy of the ankle joint from this view point one is quickly struck by the fact that it consists not of a single compartment lined by synovial membrane but rather of two, one anterior the other posterior, separated from one another by the astragalus and the two malleoli (see Figs. 1 and 2), and in communication so far as the flow of synovia or exudate is concerned only by the narrow channels beneath the internal lateral ligament on the inside and the external lateral ligament on the outside, which channels in the presence of any swelling of the synovial membrane must be almost if not quite blocked and impermeable, but which through the continuity of

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[1] Read before the New York Surgical Society, May 9, 1906.

the lining synovial membrane make extensions of inflammations from one sac to the other possible and easy. (Fig. 3.)

Furthermore the tendons in relation with the anterior and posterior ligaments compress the synovial membrane against the underlying bone and increase the difficulties to be overcome by preventing the introduction of drains of sufficient size for the purposes in view.

The plan of drainage in the earlier cases consisted essentially in the introduction of drains through the site of injury and also through counter openings made into the joint at points at which the synovial sac could be tapped most readily, and, as has been said, with most unsatisfactory results.

It seemed necessary in order to drain the joint with anything like sufficiency that space would have to be provided that would allow access to both sacs to clean them, in which to place suitable drains and through which exudate could be discharged. These conditions can best be complied with by the removal of the astragalus; for with this bone out of the way both sacs become easily accessible and there is ample room for the drains themselves and for counter openings.

Finally, the resultant state is certainly as good if not better than where, even if the leg is saved, a stiff and tender ankle is obtained.

The plan adopted, then, in several more recent cases consisted in excision of the astragalus and the drainage of the ankle through the space so created.

The method to be used in establishing this condition varies naturally with the character of the original injury.

The astragalus itself is most accessible through an incision over its head parallel to and to the outer side of the extensor tendons made with the foot strongly adducted. Through this the neck is seized by heavy forceps and drawn upon while the attached ligaments are divided and the bone freed and removed. Counter openings can now be made behind on either side of the tendo Achillis and drainage tubes placed in them. After thoroughly cleansing the joint cavity

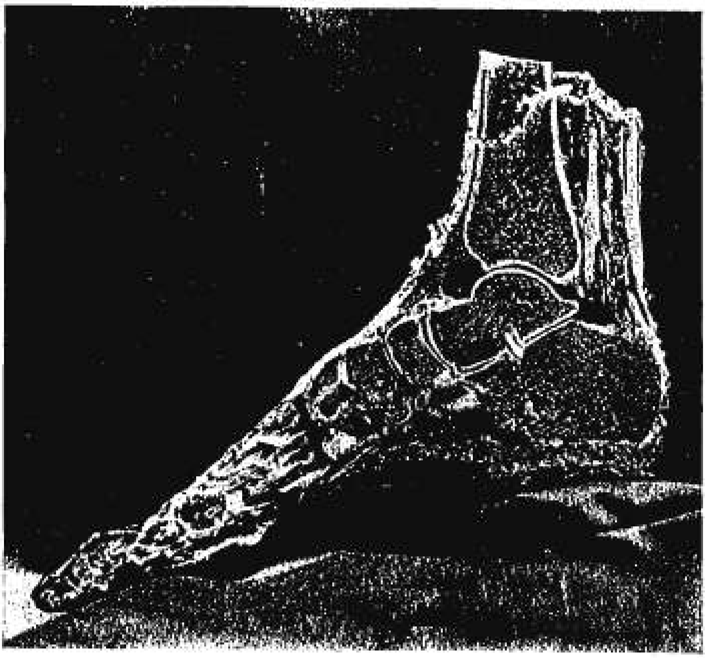

FIG. 1.—Longitudinal section showing anterior and posterior synovial sacs.

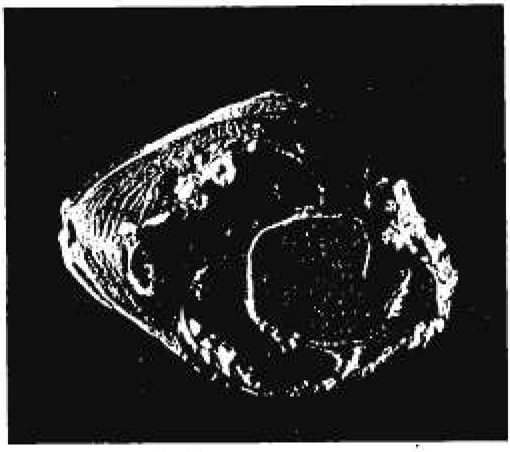

Fig. 2.—Horizontal section showing anterior and posterior sacs.

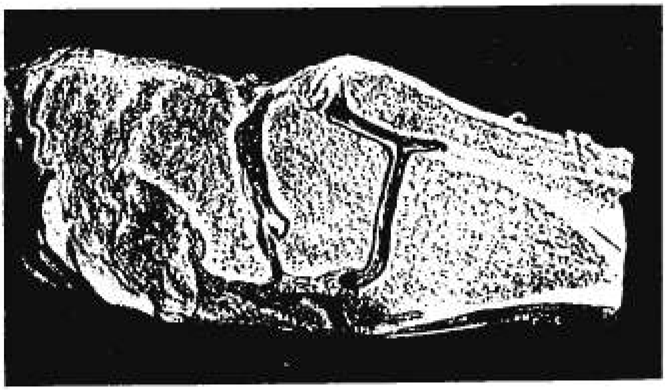

Fig. 3.—Frontal section showing, when the bones are in apposition, the slight communication between anterior and posterior sacs.

and taking care of the bone injuries the space is packed with gauze through the anterior opening and the latter kept open by the end of the gauze packing.

The foot is then brought into proper position and enveloped along with the leg in a bulky dressing and placed in a gutter splint.

The first dressing is made about the fourth or fifth day, not sooner, unless special reasons develop, and subsequent dressings at intervals of about three days

The final result shows an ankle in which there is slight motion, the foot at right angles to the leg and the distance from the knee to the under surface of the heel shortened about ⅜ to ½ inch.

Since adopting this method I have not seen a cellulitis of the leg develop and I have not been compelled to amputate in a single instance.

Although my experience has been confined to traumatic cases and among these to serve compound Pott's fractures, compound fractures and displacements of the astragalus and unclassifiable crushes of the ankle, I am inclined to believe that the same method would be of great service in certain suppurations of the ankle where thorough drainage is desirable.

As illustrations the following outlines of two typical cases may be of interest:

Case I.—Female, aged twenty-two. Admitted to hospital after having been run over by a street car. On examination there was a traumatic amputation of the right leg at the knee for which a Carden's amputation of the thigh was done.

At the left ankle there was a severe Pott's fracture with a good deal of contusion of the soft parts about the external malleolus, comminution of the lower end of the tibia and compounded by a large wound over the inner malleolus.

For this the astragalus was removed, the joint thoroughly washed out and the space packed with gauze from in front and also drained by a tube emerging behind between the external malleolus and the tendo Achillis.

There was much sloughing of the tissues of the outer ankle, including the peroneal tendons, but no cellulitis at all. The wounds gradually closed and the ankle ankylosed in good position.

She is now free from pain, walks with a cane and has " slight motion " at the ankle.

CASE II.—Male, aged twenty-three. Admitted to hospital after elevator accident. On examination there was a fracture and dislocation of the right astragalus compounded through a lacerated wound over the head of the bone.

An attempt was made to save the joint but an arthritis soon began which made it necessary to remove the astragalus through the original wound. The space was thoroughly washed out and packed with gauze from in front and further drained by tube through counter opening behind.

Convalescence was rapid and without incident.

Some weeks later the patient was walking easily upon the extremity, the foot was in good position and there was slight motion at the ankle.